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Appl. No. 09/821,848
Attorney Docket No.: 2001A001
Amdt. In Response to June 23, 2006 Office Action

REMARKS/ARGUMENTS

Claim Amendments

By the claim amendments presented, Claims 1, 4-9, 13, 14, 17-22, 26, 28-32, and 40-85 are newly canceled herein without prejudice. Claims 2, 3, 10-12, 15, 16, 23-25, 27 and 34 had been previously cancelled without prejudice. Applicants reserve the right to pursue via one or more continuing applications all of the claims which have been cancelled from the present application.

Upon entry of the amendments presented, Claims 33 and 35-39 remain in the application. No additional claims fee is due as a result of these amendments.

Invention Synopsis

The present invention as currently claimed in this application is directed to a method for the deposition and analysis of a multi-layer structure. The method comprises continuously depositing a first material onto a substrate in the form of a linear feature; continuously depositing a second material over this first material to thereby form a linear multi-layer structure; and analyzing the resulting multi-layer structure for at least one material property. During this procedure, the ratio of the first and second material is varied on a real-time basis such that the ultimately-formed linear multi-layer structure comprises a first multi-layer composition at a first portion and a second multi-layer composition at a second portion of the linear structure. Specific preferred invention embodiments include those wherein at least one of the first and second materials comprises a particulate reacted precursor, a polymer, a hydrophobic polymer, or an electrocatalyst. Another preferred embodiment comprises such a procedure wherein the first and second materials are deposited with a direct-write tool.

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Art Rejections

Rejections over Bi et al Alone

Claims 1, 4-8, 13, 14, 17-22, 40-46, 52-54, 64-69 and 77 have been rejected under 35 USC Sections 102(e) and 102(a) as allegedly either anticipated by, or unpatentably obvious over, Bi et al (U.S. Patent Publication No. 2005/0158690, hereinafter "Bi"). All of the foregoing claims which in the instant Office Action have been rejected over Bi alone have been cancelled herein. Cancellation of these claims therefore obviates both the Section 102 and Section 103 rejections over Bi standing alone.

Rejection Over Schultz et al in view of Wildpaner, Jorre et al and Bi

A number of claims, including Claims 33 and 35-39 now remaining in the application, have been rejected under 35 USC §103(a) as being allegedly unpatentably obvious over Schultz et al. (U.S. Patent No. 5,985,356, hereinafter "Schultz") in view of Wildpaner (U.S. Patent No. 3,835,873); Jorre et al. (U.S. Patent No. 3,359,784, hereinafter "Jorre") and Bi. The Examiner contends that it would have been obvious to modify the process of Schultz by adding the analytical, monitoring and adjusting features disclosed in the secondary references, to thereby arrive at applicants' invention. Such a rejection is respectfully traversed as it would apply to Claims 33 and 35-39.

Schultz discloses preparation of a substrate having an array of diverse materials in predefined regions on the substrate. The Schultz substrate is prepared by delivering components (reactants) to the substrate regions and simultaneously reacting the components to form different materials in at least two different regions of the substrate. By varying the amounts of individual reactants deposited from one region to another region, different materials can be formed within different regions on the substrate. While some of the Schultz "reactants" may be in the form of films which are deposited on the substrate regions in layers, Schultz does not disclose the real time monitoring and analysis of the resulting reacted compositions, along with the real time variation of the reactant ratios, in order to create a multi-layered structure having different compositions within different portions of a structure within any given region on the substrate.

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Wildpaner is directed to a method of producing a mixture with a constant component composition from a plurality of starting materials. This is accomplished by analyzing the component-containing starting materials with an X-ray fluorescence process so that appropriate amounts of starting materials can be used to keep the end-resulting composition constant. The Jorre reference is directed to a set-up for testing the drift of analytical instruments used to monitor components of a gas from a blast furnace so as to better maintain desired conditions in the blast furnace. Neither Wildpaner nor Jorre have anything to do with forming a multilayer structure by depositing a plurality of components onto a substrate in a liner feature.

Bi discloses combinatorial synthesis methods wherein a plurality of compositions having different characteristics is produced within a vapor in a reactor apparatus. A first quantity of a first composition is formed within the reactor and collected. Thereafter, a second quantity of a second materially different composition is then formed within the reactor and collected. A plurality of such differing compositions can be produced in the same way and collected via a plurality of collectors. These collectors are positioned to receive the varying compositions via a nozzle from the reactor apparatus. The separate compositions which are collected can then be evaluated to determine their suitability for various applications. There is no disclosure in Bi of the formation of the varying compositions of any type into a multi-layer structure linear feature onto a substrate with the resulting linear-featured structure having a compositional variation within portions of the structure.

It is respectfully submitted that none of the applied secondary references rectify the deficiencies of the primary Schultz reference *vis a vis* a teaching of applicants' method as now claimed. In the first place, the Wildpaner and Jorre patents are quite non-analogous art references, both with respect to the Schultz primary reference and to the subject matter of the presently claimed invention. In Waldpaner, there is, in fact, no formation of a multilayer structure of varying composition in any context, and there is no objective in Waldpaner to alter composition character of any structure in real time based on any kind of analysis.

Jorre is likewise unrelated in both subject matter and objective with respect to the present invention. Jorre does not measure a property on a real time basis for the purpose of altering mixed components during a depositing step to provide material of at least two different compositions, as is the instant invention. Jorre furthermore is completely unrelated to the

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deposition of any material systems onto substrates or to the forming of such compositions into the specific type of configuration claimed in the present application.

Finally, Bi is also an inappropriate secondary reference for consideration in combination with the teachings of Schultz. The Bi compositions are collected as discrete compositions in "collectors" which are variously characterized in Bi as "containers", "cups" or "reservoirs". The varied compositions separately passed into each such collector in Bi are presumably of uniform composition and therefore have no compositional variation within any such composition. There is further no suggestion in Bi to deposit the Bi compositions onto a substrate in linear form so as to create a multi-layer structure. Bi would thus not lead the skilled artisan to modify Schultz so as to deposit components with varying ratios onto a substrate in a linear feature to thereby form a structure having different portions of differing composition.

Given the foregoing considerations, it is submitted that the reference combination of Schultz in view of Waldpaner, Jorre and Bi is not one which is properly made in rejection of applicants' claims in the first place. And even if made, the combined teachings of these four patent documents still do not suggest the particular method embodiments set forth in applicants' claims as presently written. Continued rejection of these claims under 35 USC §103(a) over the applied reference matrix would therefore be improper.

Provisional Double Patenting Rejection

In the present Office Action, the Examiner has maintained the pre-RCE provisional obviousness-type double patenting rejection of certain of the present application claims in view of certain of the claims of the commonly assigned, co-pending U.S. application having Serial No. 09/821,723. At this point in prosecution of the copending '723 application, all of the claims in that copending application which were cited as the basis for the ODP rejection of the present application have now been cancelled. Such claim cancellation in the copending '723 application thus obviates the provisional ODP rejection of the claims remaining in this application over that copending case.

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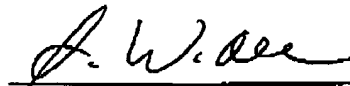
CONCLUSIONS

Applicants have made an earnest effort to place their application in proper form and to distinguish their claimed invention from the applied prior art. WHEREFORE, entry of the amendments presented herein, consideration of applicants' remarks, withdrawal of the art and provisional double patenting rejections, as well as allowance of Claims 33 and 35-39, are all respectfully requested.

Any comments or questions concerning the application can be directed to the undersigned at the telephone number given below

Respectfully submitted,

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